

IN THE CLAIMS

1. (Original) A compound for producing a heat-ray cutoff film, which comprises conductive nanoparticles uniformly dispersed in an amphoteric solvent.
2. (Original) The compound according to claim 1, wherein the conductive nanoparticles include ATO, ITO, and AZO.
3. (Currently Amended) The compound according to ~~one of claims 1 and 2,~~ claim 1, wherein the conductive nanoparticle is sized in diameter under 200 nm and in the range of 1 to 80 wt%, while the amphoteric solvent has 20 ~ 99 wt%.
4. (Original) The compound according to claim 3, wherein the amphoteric solvent includes ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monopropyl ether, or ethylene glycol monobutyl ether.
5. (Original) The compound according to claim 1, which further comprises an acid for adjusting surface charges of the conductive nanoparticles, the acid including an organic acid, an inorganic acid, or polymeric acid.
6. (Original) The compound according to claim 5, wherein the conductive nanoparticle is an ATO nanoparticle containing Sb with 5 ~ 20 wt% and the acid is included with the range of $5 \times 10^{-4} \sim 3.5 \times 10^{-3}$ g to the conductive nanoparticle.
7. (Currently Amended) The compound according to ~~one of claims 1 through 5,~~ claim 1, which further comprises a dispersing agent for stabilizing the conductive nanoparticles.
8. (Original) The compound according to claim 7, wherein the dispersing agent is included with 1 to 30 wt% to the conductive nanoparticle, while the dispersing agent includes a dispersing agent containing an amin radical, a dispersing agent containing an acid radical, or

a neutral dispersing agent.

9. (Original) The compound according to claim 7, which further comprises more one resin binder among an anti-hydrolic resin binder and a hydrolic or alcoholic resin binder.

10. (Original) The compound according to claim 9, wherein the resin binder is in the range of 1 ~ 95 wt%.

11. (Original) The compound according to claim 10, wherein the hydrolic resin binder includes a water-soluble alkyd, a polyvinylalcohol, a polybutylalcohol, an acrylic, an acrylylstyrene, or a super-acid vinyl, the alcoholic resin binder includes a polyvinylbutyral or a polyvinylacetal, and the anti-hydrolic resin binder includes a heat-hardening resin binder including an acrylic, a polycarbonate, a polychloride vinyl, an urethane, a melamine, an alkyd, a polyester, or an epoxy, or an ultraviolet-hardening resin binder including an epoxy acrylylate, a polyether acrylyate, a polyester acrylylate, or an urethane-metamorphosed acrylylate.

12. (Original) The compound according to claim 9, wherein the conductive nanoparticle is sized in diameter under 200 nm and in the range of 1 ~ 80 wt%, while the amphoteric solvent has 20 ~ 99 wt%.

13. (Original) The compound according to claim 12, wherein the amphoteric solvent includes ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monopropyl ether, or ethylene glycol monobutyl ether.

14. (Original) The compound according to claim 12, wherein the conductive nanoparticle is an ATO nanoparticle containing Sb with 5 ~ 20 wt% and the acid is included with the range of $5 \times 10^{-4} \sim 3.5 \times 10^{-3}$ g to the conductive nanoparticle.

15. (Original) The compound according to claim 12, wherein the dispersing agent is included with 1 ~ 30 wt% to the conductive nanoparticle, while the dispersing agent includes a dispersing agent containing an amin radical, a dispersing agent containing an acid radical, or a neutral dispersing agent.

16. (Original) A method of forming a compound for producing a heat-ray cutoff film, which comprises uniformly dispersing conductive nanoparticles uniformly in an amphoteric solvent.

17. (Original) The method according to claim 16, wherein the conductive nanoparticle is sized in diameter under 200 nm and in the range of 1 ~ 80 wt%, while the amphoteric solvent has 20 ~ 99 wt%.

18. (Currently Amended) The method according to ~~one of claims 16 and 17~~, claim 16, wherein the conductive nanoparticles are dispersed in the amphoteric solvent by means of a dispersing agent and at least more one among acids to adjust surface charges of the conductive nanoparticles.

19. (Original) The method according to claim 18, wherein the conductive nanoparticle is an ATO nanoparticle containing Sb with 5 ~ 20 wt%, the acid is included with the range of $5 \times 10^{-4} \sim 3.5 \times 10^{-3}$ g to the conductive nanoparticle, the dispersing agent is included with 1 ~ 30 wt% to the conductive nanoparticle, and the dispersing agent includes a dispersing agent containing an amin radical, a dispersing agent containing an acid radical, or a neutral dispersing agent.

20. (Original) A method of forming a heat-ray cutoff film, comprising the steps of:
mixing the compound defined in claim 19 with one more resin binders among a anti-hydrolic resin binder and a hydrolic or alcoholic resin binder; and
depositing the mixed composite on a substrate and hardening the deposited composite by a chemical ray using an ultraviolet or an electronic ray, or by heat.

21. (Original) The method according to claim 20, wherein the resin binder has 1 ~ 95 wt%.

22. (Original) The method according to claim 20, wherein the substrate is an alternative one of a glass, a ceramic, a plastic, a metal, and a product of the formers, and the compound including the resin binder is processed in a plastic condition under 50 ~ 500°C.

23. (Original) The method according to claim 20, wherein the substrate is a polycarbonate-series resin, a poly (metha) acrylesther-series resin, a saturated fatty acid, or a cyclo-olefin resin, and hardened by an ultraviolet.

24. (Original) The method according to claim 23, wherein the ultraviolet is irradiated in the range of 500 ~ 1500 mJ/cm and the hardening proceeds in the velocity of 15 ~ 50 m/min.

25. (Original) A heat-ray cutoff film manufactured by the method as defined in claim 18.

26. (Currently Amended) A heat-ray cutoff film manufactured by the methods as defined ~~claims 19 through 24~~ claim 19.

27. (Original) The heat-ray cutoff film according to claim 26, wherein the film has a surface resistance of 106Ω/□.

28. (Original) The heat-ray cutoff film according to claim 26, wherein the film has thickness under 5 μm, pencil intensity above 1H, visible light transmittance above 50%, and heat-ray cutoff rate of 50%.

29. (Original) A method of screening heat rays by attaching the heat-ray cutoff film on a vessel containing drinking water, preventing the heat rays from going in and out of the vessel to retain temperature of the drinking water.

30. (Original) A method of screening heat rays with a heat-ray cutoff film, comprising the steps of:

forming a compound by uniformly dispersing conductive nanoparticles in an amphoteric solvent;

mixing the compound with one more resin binders among a anti-hydrolic resin binder and a hydrolic or alcoholic resin binder;

depositing the mixed composite of the compound and resin binder on a substrate and then forming the heat-ray cutoff film by hardening the deposited composite by a chemical ray using an ultraviolet or an electronic ray, or by heat; and

coating the hear-ray cutoff film on a surface of a vessel containing a content.

31. (Original) The method according to claim 30, wherein the conductive nanoparticle is sized in diameter under 200 nm and in the range of 1 ~80 wt%, while the amphoteric solvent has 20 ~ 99 wt%.

32. (Currently Amended) The method according to ~~one of claims 30 and 31~~, claim 30, wherein the conductive nanoparticle are dispersed in the amphoteric solvent by means of a dispersing agent and at least more one among acids to adjust surface charges of the conductive nanoparticles.

33. (Original) The method according to claim 32, wherein the conductive nanoparticle is an ATO nanoparticle containing Sb with 5 ~ 20 wt%, the acid is included with the range of $5 \times 10^{-4} \sim 3.5 \times 10^{-3}$ g to the conductive nanoparticle, the dispersing agent is included with 1 ~ 30 wt% to the conductive nanoparticle, and the dispersing agent includes a dispersing agent containing an amin radical, a dispersing agent containing an acid radical, or a neutral dispersing agent.

34. (Original) The method according to claim 30, wherein the resin binder has 1 ~ 95 wt%.

35. (Original) The method according to claim 30, wherein the substrate is a polycarbonate-series resin, a poly (metha) acrylesther-series resin, a saturated fatty acid, or a cyclo-olefin resin, and hardened by an ultraviolet.

36. (Original) The method according to claim 30, wherein the vessel is made of a metal, a ceramic, or a plastic, containing drinking waters or foods.